



AG NEWS & VIEWS



SAFETY

Values That Keep Farm Kids Safe

by Rodney Pierce, inventory and equipment supervisor | rlpierce@noble.org



From the time I was 6 or 8, I was helping my dad out on our family's farm. We raised cattle and grew peanuts and wheat. My earliest jobs were helping my dad feed small square bales, hoeing peanuts and many

other basic tasks related to operating a farm. Over time, I became more involved in every aspect of the operation. Now, I raise a few cows on a small place in Leon, Oklahoma, in addition to supervising

NATIONAL FARM SAFETY AND HEALTH WEEK

National Farm Safety and Health Week will be recognized Sept. 17-23, 2017. This year's theme is "Putting Farm Safety Into Practice." The annual awareness campaign is organized by the National Education Center for Agricultural Safety. Learn more at necasag.org

equipment maintenance and repair at the Noble Research Institute.

Safety was something my dad hammered into me from an early age. I remember him pointing out different things on the farm, like a rotating PTO shaft on the tractor, and saying "That'll kill you, son." It's a blunt statement, but there's a lot on the farm - from equipment to animals - that could hurt an adult or child. Safety was part of our everyday life conversations; it was a mindset my dad learned from his dad. Now that I have children who help me on the farm, I am constantly

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Axel, 11, (light blue shirt), and Josh, 9, help their dad, Rodney Pierce, around the family farm while learning the same safety mindset Rodney learned from his father.



thinking about keeping them safe and passing that safety mindset on to them.

In recognition of National Farm Safety and Health Week, I want to share with you some of the farm safety values passed down in my family.

1. Respect livestock.

Animals' size and weight can make them dangerous. It's important to give animals their space and to be extra cautious with males and mothers with offspring. Dad also taught me the importance of "always having a way out," in case an animal gets aggressive. That's something I'll teach my children as they get older and start working more closely with the cattle.

2. Respect equipment.

Know what equipment is designed to do, and don't push it beyond those boundaries. This goes for both adults and children. As a grownup, it's neat to put your child in the tractor with you. But if you don't have a buddy seat, you shouldn't have a passenger. Another piece of equipment commonly misused is a side-by-side

SAFETY SHOULD BE PRIORITY WHEN ASSIGNING CHORES

Limit risks to children on the farm by raising their awareness and knowledge of safety. Adults should also consider the child's attention span, ability to think fast, physical limitations and maturity level when assigning tasks.

utility ATV. I teach my children that these vehicles are pieces of equipment designed to help us work. They aren't toys.

3. There's a lot of equipment you don't need to be close to if you're not using it.

I tell my kids they should stay at least 60 feet away from me if I'm using the lawnmower or weed-eater. They know not to come up to me from behind. If

they need to get my attention, they can get my attention from a distance.

4. If you don't know what something is, don't mess with it.

This knocks out a lot of hazards. My dad always told me, "If I haven't told you about it, it's not your business." I keep power tools and chemicals out of reach, when possible, but I also teach my children they shouldn't touch things if they don't know what they are or if they were told not to touch them. My dad's refrigerator to this day has a shelf in it for cattle vaccines. He made sure we knew from a young age what that shelf was for and not to touch it.

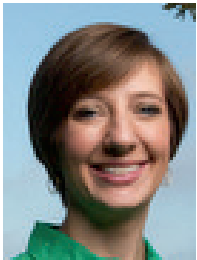
5. If you can't see my eyes, I can't see you.

I watch for my kids constantly, but kids can come out from nowhere. If you're in a tractor, it would be very easy to not see or hear them come to the field. That's why I tell my kids to be sure I know if they're in the field and that I see them. If they can't see my eyes, then I can't see them either. 🐮

ECONOMICS

Options to Consider When Marketing This Year's Calves

by Myriah D. Johnson, Ph.D.,
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Since October 2016, we've seen a 25 percent increase in feeder cattle prices. Before that, it was a 45 percent decline in feeder cattle prices since the high in June 2015. It has been a wild ride to say the

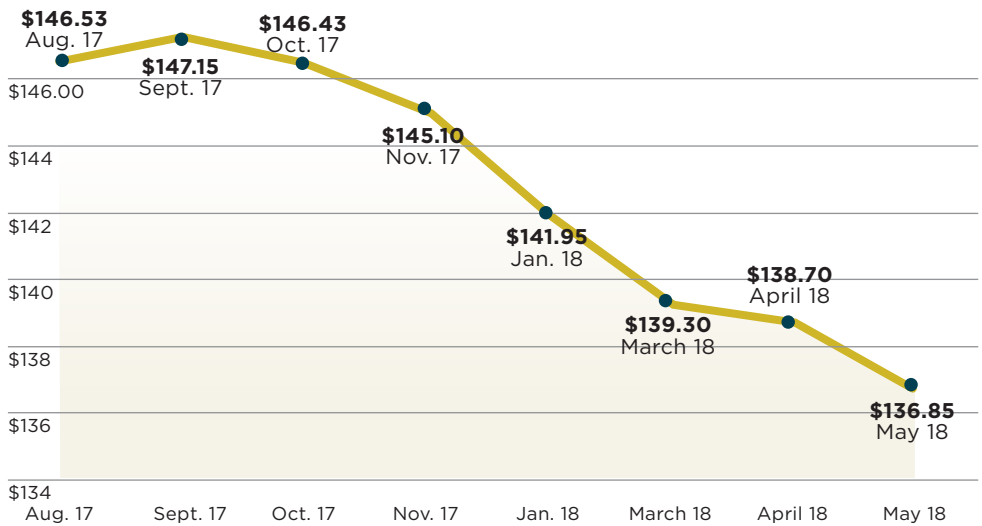
least. While the markets may be volatile, one point of consistency every fall is that there is a host of alternatives to evaluate when thinking about marketing calves. Some producers have 2016 fall-born calves to sell, while others contemplate the best option for their 2017 spring-born calves. Here, we'll walk through options for each calving season.

MARKETING FALL-BORN CALVES

Calves born in fall 2016 are now hitting the yearling mark and probably weigh close to 800 pounds. The basic question many producers have is, "Do I sell now or later?" At this writing, we estimate an 800-pound steer to bring \$147.15 per hundredweight in September 2017. Looking on down the road, we estimate that a 900-pound steer in Oklahoma City in November 2017 would bring \$146.27 per hundredweight based on the current futures price and historical basis. Looking to January 2018, we figure a 1,000-pound steer in Oklahoma City would bring \$128.35 per hundredweight. That is a pretty steep discount going from September to January - nearly \$20 per hundredweight. In most cases, it can be hard to overcome that kind of price decline. However, the lack of price decline (or near even prices) going from September to November can allow a producer to put gain on cattle and create value. In this alternative (September to November), the value of gain at \$1.39 per pound is more than twice that if we extend out to January 2018. For those whose cost of gain is well below \$1.39 per pound, producers who hold onto calves that gain a few extra pounds from September to November may find themselves a pretty good deal. In this case, a flat market is a friendly market after seeing the deep discounts in forward months last fall.

FIGURE 1: FEEDER CATTLE FUTURE CONTRACTS

Feeder cattle futures contract prices (700- to 900-pound steers) August 2017 through May 2018.



Source: CME Group Inc.

MARKETING SPRING-BORN CALVES

For calves born in spring 2017, the question is essentially the same, "Do I sell now or later?" However, there are many different "laters." The choices here are: 1) strip the calves from their mothers and sell before the bawl is out of them; 2) wean and background or precondition the calves; 3) wean, background, place them on winter small grains pasture and pull them off by first hollow stem; or 4) wean, background and place them on winter small grains pasture through graze out. We will assume that the strip and sell calves weigh 500 pounds in October 2017, the preconditioned calves will weigh 600 pounds in December 2017, those off winter small grains will weigh 800 pounds in March 2018, and those off the graze-out winter pasture will weigh 900 pounds in April 2018. Currently, we estimate the value of gain to be \$1.70 per pound going from October to December, while it's estimated at 94 cents per pound going from October 2017 to March 2018, and 64 cents per pound going from October 2017 to April 2018. Again, the price discount going into next spring is steeper than what we see in the remaining few months this fall (Figure 1). If you are looking for the highest value of gain, that looks to be in just a few short months this fall.

PRECONDITIONING CALVES

Producers who precondition their calves may be able to attain a higher

value of gain than the \$1.70 currently offered at the market. Generally, the highest prices are for calves participating in a VAC-45 or VAC-60 program that require a minimum length of weaning time and are combined with a health protocol. Every producer must evaluate the trade-offs of preconditioning for themselves, but most can expect preconditioning to be a profitable endeavor eight or nine out of 10 years. Alternatively, selling calves in October immediately after they are removed from their mothers can result in significant discounts as well as much higher shrink. Retaining ownership of calves for preconditioning increases risk; each producer must evaluate this for themselves.

KEEP YOUR PENCILS SHARP

Whether you have fall- or spring-born calves, the best alternative this fall currently looks to be holding the calves until November (fall 2016 calves) or December (spring 2017 calves), and selling before the market prices start to decline into next spring. As mentioned in previous articles, risk management is an important part of any retained ownership program. Prices can change in a hurry. Keep your pencils sharp, and crunch these numbers for your situation. 🐄

LIVESTOCK

Feeding Hay More Efficiently

by Evan Whitley, Ph.D., cattle systems contract research manager | ewhitley@noble.org and Curt Larson, farm facility manager | crlarson@noble.org



Ruminants have a distinct advantage compared to other livestock because of their ability to process highly fibrous, otherwise nonutilizable, feedstuffs into a marketable product. Oftentimes, this conversion advantage is only referenced to specific, industry-related outcomes such as body condition, parturition and/or weight gain. However, a bigger picture perspective points to the societal benefits these animals possess. Ruminants are both “cellulose converters,” and they thrive in geographic regions that would otherwise go underutilized. This is especially true for cattle based on their contribution to human-consumable protein (per capita beef consumption is approximately 55 pounds) and the overall magnitude of the cattle industry’s economic impact (\$88.25 billion in receipts).

Considering beef’s broader contribution and the likelihood that hay and pasture costs make up between 30 and 35 percent of a spring-calving cow herd’s total production cost, it is imperative for operations to strive for efficient capture, allocation and utilization of forage resources. This can be done through a systematic grazing management plan and an efficient supplemental feeding program that includes hay as a potential option. Fortunately, this past summer was pretty good to us, and quite a bit of excess forage production was available to capture. However, oftentimes quantity doesn’t correlate to quality, which begs the question of how to ensure we properly allocate and utilize hay during the upcoming feeding season regardless of whether the hay is raised or purchased.

If hay will be supplemented, there is no substitute for a nutrient analysis. Testing is pref-



A Vermeer BPX9000 bale processor is shown in operation. Vermeer, Inc. is acknowledged for its provision of this equipment and its technical assistance provided in Noble’s use and evaluation of this equipment and related accessories.

erably done prior to purchasing and especially before feeding to determine any major deficiencies and additional nutrient needs.

Allocation is also of utmost importance and can alter the overall efficiency by which these “stored” nutrients are utilized. Most often, allocation consists of a hay bale sometimes in a ring, in the middle of a pasture, or next to mineral and a water source. Although this is commonly the case, it isn’t the most efficient means of feeding hay. Minimally, use a bale ring to maintain the integrity of the bale for as long as possible and to reduce losses caused by trampling and contamination from urination and defecation. To further reduce wastage, consider labor availability and minimize the amount of hay offered, but be sure to meet the daily intake needs of the animals being fed especially if a hay ring isn’t being used.

Many producers trying to further improve the overall efficiency of feeding hay are investigating other means of allocation. Bale processors are one such mechanism of choice and are used to deliver hay in both pasture (windrows/troughs) and pen environments.

Here at the Noble Research Institute, we have been processing hay at our Oswalt cat-

tle facility for the last year and feeding cows and calves in windrows and bunks. From a strictly nutritional perspective, processing (i.e., lightly chopping) hay improves utilization due to the increased accessibility of structural and nonstructural carbohydrates in the hay to the microbial population in the animal’s rumen, especially for roughages that are lower in quality. Operationally, the processor is very easy to use and does a good job of uniformly chopping most roughage sources given, including bermudagrass, alfalfa, soybean, rye/ryegrass, switchgrass and native grass.

Overall, we have witnessed less wastage when “windrowing” cows in the pasture, but we have had some difficulty feeding in our concrete bunks (especially in high winds). As with any piece of equipment, we continue to learn more and better ways to use it. A good example is using the processor to cover newly constructed pond dams and right-of-ways, where it worked very well.

As one would imagine, the biggest potential downside is the machine cost. This has to be weighed on a case-by-case basis depending on the size of the operation, access to resources (labor, hay quality, capital, etc.) and the value placed upon convenience. 🐮

LIVESTOCK

Tips for a Successful Weaning and Preconditioning Season

by Robert Wells, Ph.D., livestock consultant | rswells@noble.org



For those producers who have a defined spring calving season, weaning the calf crop is just around the corner. There is a sizable amount of data and literature that demonstrates preconditioning calves will return a

greater profit back to the ranch than striping and selling a bawling calf. Feedlot buyers are becoming more selective and are rewarding cattle producers with proper vaccination and preconditioning programs (or discounting those who don't). The following tips are designed to help producers be more successful during the preconditioning phase of calf development.

PLAN EARLY.

This is especially warranted if you will need additional, off-farm help. Contact the people you will work with, including your veterinarian, early so you can pick the date you prefer to work calves. Additionally, some vaccines or medicine may become in shorter supply locally if you wait until closer to the time you and your neighbors start to wean calves.

STOCKPILE FORAGES IN THE WEANING TRAP/PASTURE. This will ensure you have adequate quantity and quality of standing grass for the newly weaned calves to eat and bed in during the preconditioning phase. You will most likely have to start this process in August, but it's not too late to allow the forages a chance to recover and grow now. This will also reduce the amount of dust the calves could inhale compared to a dry lot situation.

DEVELOP A MARKETING PLAN. Know your marketing strategy by the time you get ready to wean the calves. Identify a branded program that you can affiliate with, such as the Integrity Beef Alliance (www.integritybeef.org), to help differentiate your calves from others being sold at the same time of year. If not affiliated with a third-party calf program, you will want to make sure there are other value-added calves being sold on the same day and market as your



calves. Buyers need to be able to put together large gooseneck trailer and semitruck loads of same sex and similar type and weight calves. If you deliver 50 head of mixed calves to the local market and are the only one who has value-added calves on that day, don't expect to receive a premium for them. There is simply not enough to make a load for the buyer, and the calves will get mixed with other calves that have not received additional management. Remember that when the height of the fall weaning season is in full swing, markets typically will have a price drop when a large supply of calves move to market. Unless you see outside influences on prices, try not to get too wrapped up in the market decline at this time. Typically, prices will recover after the supply dwindles somewhat later in the fall/early winter. Preconditioning helps move your marketing to a better time of year with fewer calves going to market.

CONSIDER RISK PROTECTION OF THE CALF CROP. It may not be too late to consider some sort of financial risk protection for the calf crop. Visit with a financial adviser who is familiar with agricultural commodity markets or an agricultural economist to help make the decision of what, how and when to purchase risk protection.

PROCURE FEED AND QUALITY HAY. Give yourself time to buy and the feed dealer time to deliver the feed and hay that will be needed for the preconditioning phase of calf development. Plan to feed the highest quality hay to the calves you have while you have them caught up during the bawling-out period. They will not be very interested in spending a lot of time eating, so what they do eat needs to be as nutritious as possible. Planning ahead also allows you time to shop for the best feed deals and best quality hay available in your area.

CHECK SUPPLIES. Make sure vaccines, even if recently purchased, are not expired. Check the function of vaccine guns – easy to use, no blow-by of product, clean and in good repair. Check the squeeze chute, gates and fences to ensure they are ready for cattle working day. Do you have extra pins for ear taggers and enough transfer and injection needles? It is always a good idea to have extra supplies (ear tags and studs, vaccines, needles, syringes, anthelmintics, rope, parts for squeeze chute, etc.) on hand to prevent the need to make an unscheduled trip to town on working day.

MOVE HERD CLOSER TO FACILITIES IN ADVANCE. This will reduce the stress of hauling or driving cattle over far distances on weaning day. This affords you to have more time to actually process the cattle. Working calves through the chute in a slower, more deliberate fashion will create a less stressful environ-

ment for the calves and workers. **START AND FINISH AS EARLY IN THE DAY AS POSSIBLE.** During September and October, the days can still get pretty warm. It is never a good idea to extend calf working into the heat of the day, especially if there is a high probability of temperatures above 85 degrees Fahrenheit.

FENCE LINE WEAN THE CALVES. If possible, fence line weaning is one of the lowest stress methods. Alternatively, or in addition to the fence line weaning, the use of nose flaps prior to the physical weaning process can reduce calf and cow stress as the calf will be weaned off the need/desire for milk. Nose flaps also help reduce the calf's emotional dependence on the cow.

PLAN AND SCHEDULE TRANSPORTATION OF THE CALVES TO MARKET. Using an air-ride semitruck is less stress-

ful on the calves than a bumper pull or gooseneck trailer, especially if your trailer is equipped with a spring suspension. If you don't have enough calves for a semitruck load, consider finding others in your area who also need trucking and share a truck. The cost of commercial transportation can easily be overcome when considering your time, wear and tear on your equipment, potential for breakdowns (trailer tire flats and blowouts are common occurrences), and shrink of calves from hauling in less-than-adequate equipment.

There are numerous other considerations you should think about prior to and during weaning to ensure a successful weaning season. The above tips are some of the more common issues I typically see with producers on an annual basis. Remember the old adage: prior planning prevents poor performance. 🐾

EVENT

LOW-STRESS CATTLE HANDLING

Tom Noffsinger,
DVM



Join us to learn about low-stress cattle handling from Tom Noffsinger, DVM. Noffsinger is a world-renowned expert on cattle handling and stockmanship. After 32 years of practicing veterinary medicine, Noffsinger became an independent feedlot consultant. He specializes in facility design, stockmanship and production animal consultation. Noffsinger also ranches in Benkelman, Nebraska.

8:30-11:30 a.m.

Oct. 9, 2017

Noble Research
Institute Pavilion
No registration fee

For more information or to register, visit www.noble.org/events or call Danielle Pacifico at 580-224-6376. Preregistration is requested.





LIVESTOCK

Body Condition Score as a Tool for Cow Herd Management

by Ryon Walker, Ph.D., livestock consultant | rswalker@noble.org



Technology has provided agriculture with new, creative and efficient ways to accomplish production goals. However, sometimes traditional tools still provide effective ways to manage the cow herd at different stages of production. One of these traditional tools is body condition scoring (BCS). Most cattle producers are familiar with BCS and its impacts on fertility. However, how can BCS be used as a tool to prevent negative impacts on fertility?

Body condition score is used to assess the energy status (fat cover) of an animal. This process is done with visual observation of an animal and applying a value (BCS score) to that animal. The scoring system used is a 1 to 9 point scale with 1 = emaciated (very thin) and 9 = obese (very fat). This scoring system is a subjective measurement, and how one person scores may be different compared to another scorer. It is critical that scoring is done consistently by the same person over time in order to effectively manage your cow herd and feed resources. Producers target their cows to score between a 5 and 6 so a cow has the best opportunity to produce a calf every year. A change in 1 BCS is equivalent to 90 pounds of body weight. It is not recommended to compare BCS across herds that were scored by different people because not every person evaluates an animal the same or gives the same score.

It is not always feasible to BCS each individual cow within a group and make sorts. In this case, score half of the group to estimate an average score for the whole group. If there are just a few thin cows in the group, determine why they are thin. Is it because of age (young vs. old), lameness or sickness, or is there a parasite problem?

Body condition scoring is a practical tool and an important practice that allows producers to quickly estimate the energy status of cows at that point in time. With this information, decisions can be made to manage an individual or a group of cows separately without having to supplement the whole herd, and ultimately you'll save on feed cost. 🐮

RYON WALKER, PH.D. Meet the New Livestock Consultant

Ryon Walker grew up in central Texas, where he enjoyed hunting, team roping, showing steers and heifers, and FFA. In 1996, he interned for Leachman Cattle Company in Billings, Montana. There, he developed an interest in the cow-calf sector, particularly in the field of reproductive physiology. He also managed Butler and Son Charolais while earning his master's degree. His primary focus is nutrition and reproductive management practices to improve fertility and longevity in the cow herd, as well as identifying traits that assist in selecting replacement females that are more efficient on forages.



Education:

- **Bachelor of Science** in Animal Science, Texas A&M University, 1997
- **Master of Agriculture** in Animal Science, Texas A&M University, 2000
- **Doctor of Philosophy** in Reproductive Physiology, Colorado State University, 2004



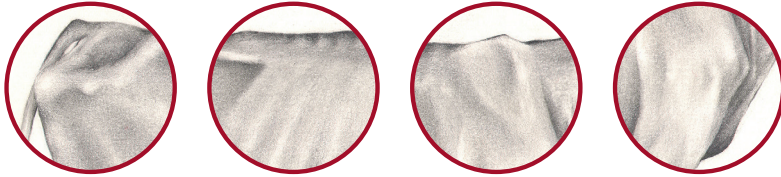
Work History: Before joining the Noble Research Institute in June 2017, Walker spent six years with the University of Minnesota as a beef extension specialist. He conducted programs and workshops across the state, and he worked with producers on ways to extend their fall grazing season and evaluate cow size and efficiency within their herds. He also spent nearly seven years with Louisiana State University as an assistant then associate professor conducting research in the areas of cow feed efficiency, alternative feeding strategies during the backgrounding period, and management strategies to improve reproductive efficiency. *Contact Ryon Walker at rswalker@noble.org*

What is Body Condition Score?

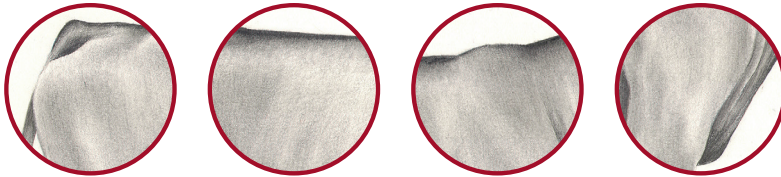
Body condition score gives us a snapshot in time of the animal's energy status. This indicates how well the animal is doing based on production stage and diet. Body condition score should be assessed on cows at different times of the year so that you can make management decisions based on their current condition. The three most critical times of the year are at calving, mid-lactation and mid-late gestation.

BODY CONDITION SCORE

1 **Hips:** no palpable fat **Ribs & Spine:** no palpable fat
Shoulder: front of shoulder is slightly pointed
Brisket: no palpable fat

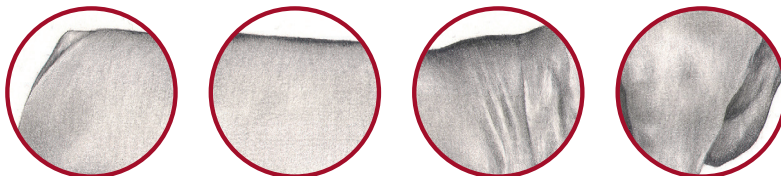


3 **Hips:** some palpable fat cover **Ribs & Spine:** ribs still individually identifiable but with rounded edges, some palpable fat along spine and over dorsal portion of ribs
Shoulder: front of shoulder is slightly pointed **Brisket:** some palpable fat cover



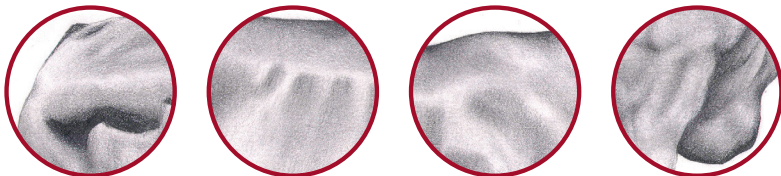
56 percent of BCS 3 cows became pregnant after 75-day breeding season. According to a study conducted, in part, by Ryon Walker, Ph.D., at Louisiana State University, the ideal body condition score for breeding cows is 5 or 6. The rate of pregnancy after a 75-day breeding season was 88 percent in cows with a BCS of 5 and 89 percent in cows with a BCS of 6. Rates dropped to 56 percent in cows with a BCS of 3.

7 **Hips:** very spongy fat cover, developing pones (fat pockets)
Ribs & Spine: ribs and spine not visible, very spongy **Shoulder:** very spongy, hard to distinguish front of shoulder **Brisket:** very spongy



67 percent of BCS 7 cows became pregnant after a 75-day breeding season.

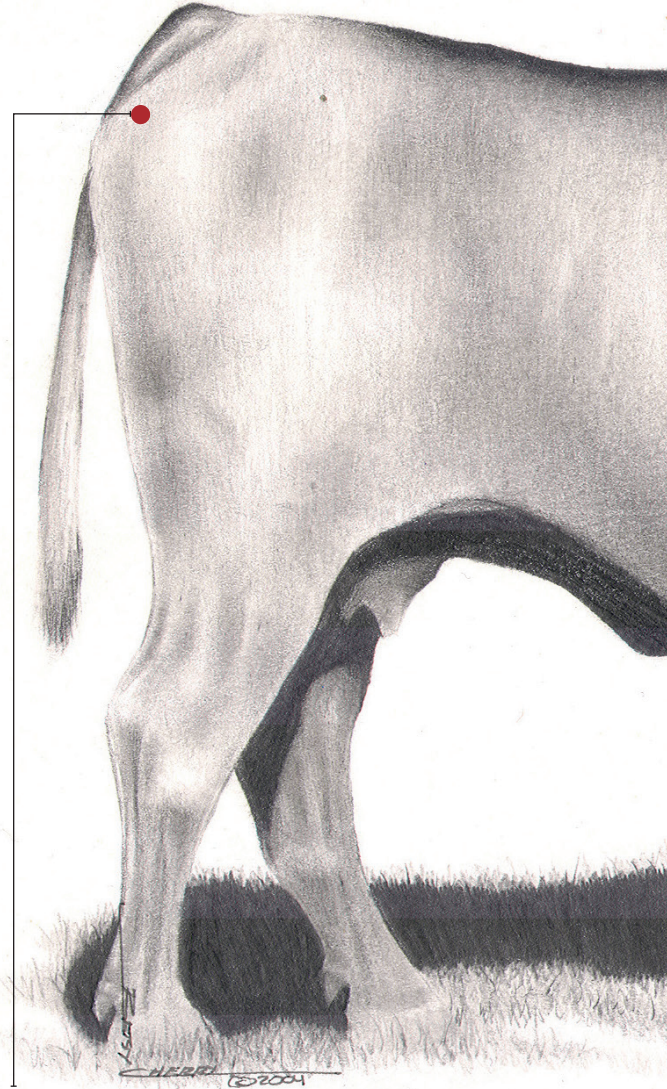
9 **Hips:** tail head and hips buried in fatty tissue, pones are protruding
Ribs & Spine: excessively spongy along back and over ribs, no bones detectable **Shoulder:** excessively spongy, shoulder looks blocky
Brisket: excessive amount of fat hanging between front legs



5 A BCS of 5 or 6 is the ideal body condition for breeding and calving. The large cow below shows a BCS of 5.



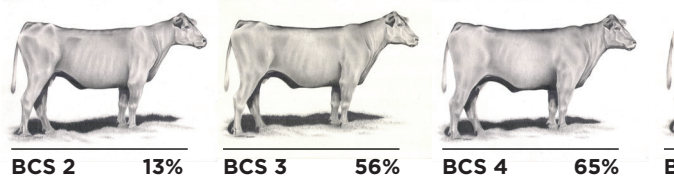
88 percent of BCS 5 cows became pregnant after a 75-day breeding season.



HIPS

Palpable fat cover is detected over hips with some signs of fat pockets developing around the tail head.

75-DAY BREEDING SEASON PREGNANCY RATES



RIBS & SPINE

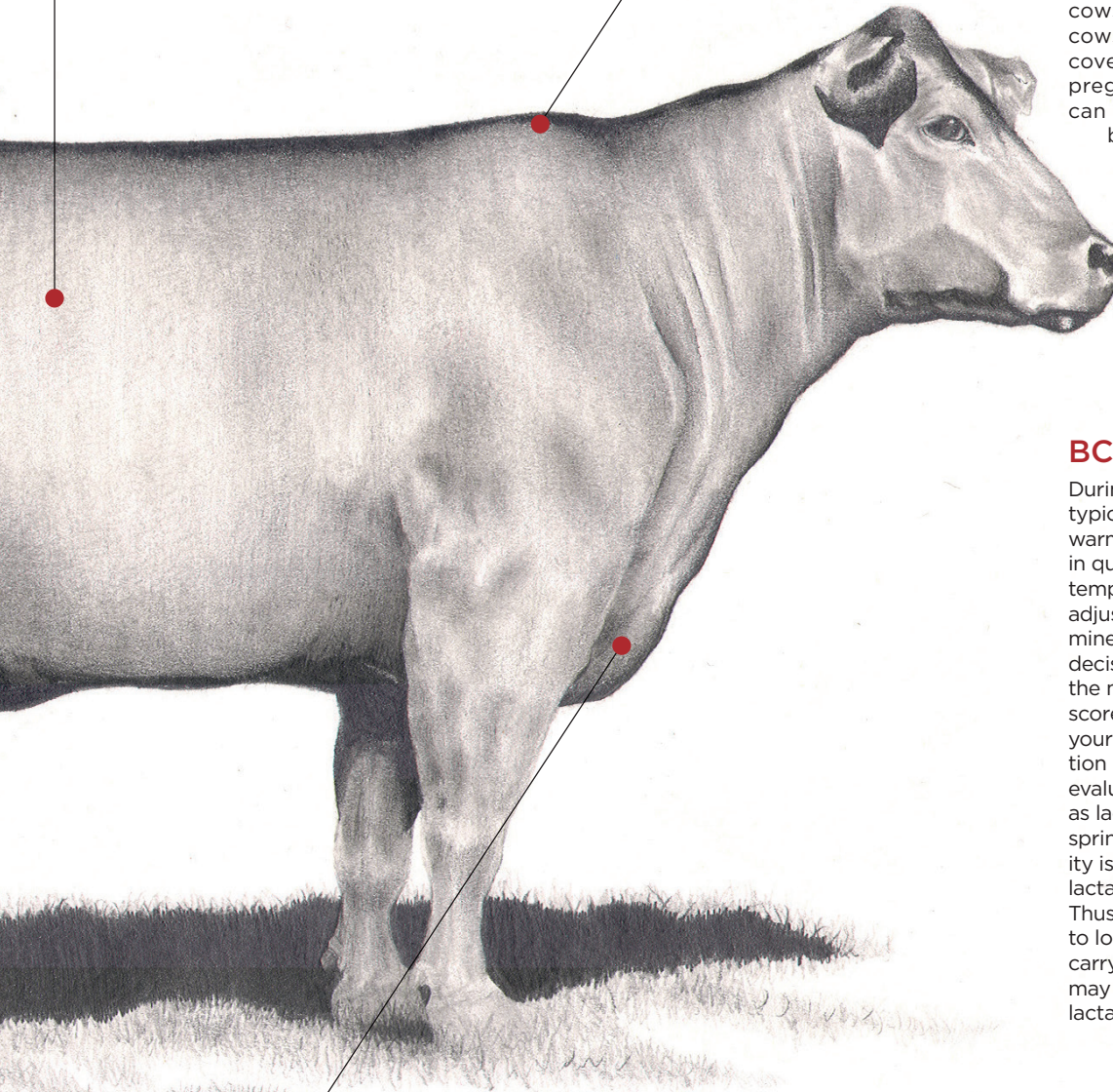
Developing a spongy feel over ribs and spine. Spine is not visible, but the last two ribs are still visible.

SHOULDER

Some palpable fat cover is developing. The front of the shoulder is rounded, not pointed.

BRISKET

Starting to develop palpable fat cover in the brisket. Fat cover is smooth to the look with no developing fat pockets yet.



When to Assess

The three most critical times of the year to assess body condition score are at calving, mid-lactation and mid-late gestation.

BCS AT CALVING

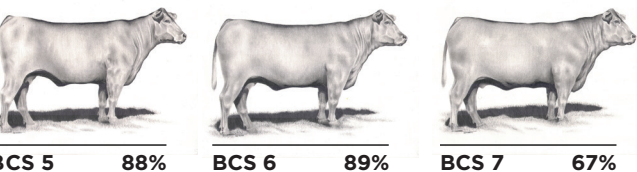
Many studies have correlated cow BCS at calving and the likelihood of getting pregnant during the breeding season. For example, cows in a BCS of 5 or greater have a better chance of getting bred early during the breeding season compared with cows in a BCS of less than 5. In addition, cows that have too much condition or fat cover (BCS greater than 7) can have lower pregnancy rates. This snapshot at calving can allow you to make adjustments in diet based on the time of year and calving season (spring or fall) to improve a cow's plane of nutrition and body condition prior to the breeding season. Young lactating females that are thin at calving will struggle to improve their body condition prior to breeding, unless they are on full feed.

BCS AT MID-LACTATION

During mid-lactation, the breeding season is typically wrapping up. For spring-calving cows, warm-season grasses are starting to decrease in quality because of lack of moisture and hot temperatures. This time of year will allow you to adjust your summer grazing strategy and determine if supplementation or other management decisions are needed. For fall-calving cows, it's the middle of winter. Based on the condition score of your cows, you may need to adjust your supplementation program. At this production phase, it is critical that condition scores be evaluated in younger producing females, such as lactating 2- and 3-year-olds. Oftentimes in spring-calving cows, warm-season forage quality is not sufficient to meet the requirements for lactation and growth of a lactating 2-year-old. Thus, most of those younger females will begin to lose body weight and condition, which will carry over into the next calving season. You may want to consider early weaning the young lactating females if this occurs.

BCS AT MID-LATE GESTATION

Mid-late gestation is the most critical and most convenient time to body condition score. This is typically done at weaning or a follow-up working after weaning where cows are palpated for pregnancy, dewormed and possibly vaccinated. At this stage, cows are approximately three to four months prior to calving, which allows the opportunity to adjust management so the majority of cows calve in a BCS range of 5 to 6. Cows can then be sorted into a fleshy and thin group using BCS, if pastures and resources allow. This prevents overfeeding or underfeeding certain groups, which ultimately saves money.



Images provided by University of Minnesota Extension Beef Team

Source: Demeterco et al., 2017



ECONOMICS

Tools to Manage Cattle Market Risks

by Jason Bradley, agricultural economist | jwbradley@noble.org



To hedge or not to hedge, that is the question: Whether 'tis nobler in the mind to maybe just go ahead and use forward contracting? But what about using options? You always hear about that being a great tool. Then, you start

hearing about all the ways you could combine all of these. Your mouth goes dry, hands begin to sweat and the room starts to spin. You can see how this can get very complicated, very fast. Without a firm understanding of what these strategies and tools are, it's almost impossible to understand what benefits they potentially hold for you.

TYPES OF RISK IN CATTLE PRODUCTION

If we step all the way back and look at cattle production, we see there are two types of risks. We call these risks because they are things you can't control. The first is production risk. This deals with factors influencing desirable reproduction levels (such as conception and birthing percentages) and keeping your cattle healthy, which ensures calves reach their desired levels of gain. The second is market risk, which is the focus of this article.

MARKET RISK

As a producer, you are a price taker. The price you receive for your goods is set by the con-

CATTLE MARKET STRATEGIES

There are different ways to manage market risks when selling your cattle. These four strategies are discussed in this article.

Cash Market - Selling your cattle on an open market (i.e., a livestock auction).

Forward Contract - An agreement to deliver cattle that meet a specified number, weights and delivery date.

Short Hedge - Selling a futures contract to minimize the risk of fluctuating market prices on the open market.

Put Option - The opportunity, but not the obligation, to sell a futures contract at the set strike price.



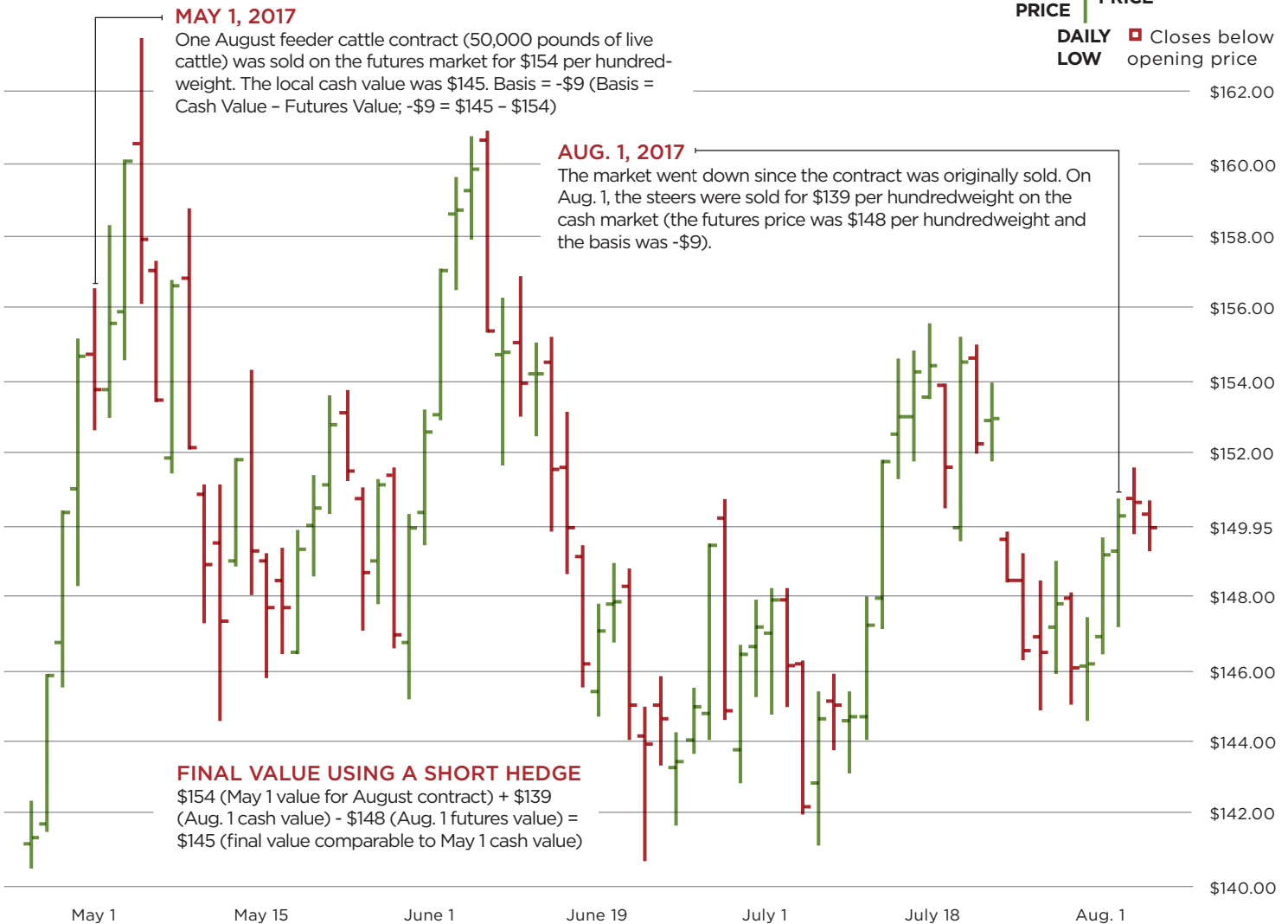
Additional information from the CME Group about feeder cattle hedging with futures and options can be found at: bit.ly/livestock-futures

FIGURE 1: FEEDER CATTLE FUTURES, AUG. 11, 2017

Feeder cattle trading prices on the futures market by day from May to August 2017. The futures market allows producers, as “hedgers,” to sell contracts of commodities that they produce (like feeder cattle) to be sold on the cash market at a future date. In our first example, an August feeder cattle contract was sold on May 1, 2017. In our second example, we bought an option to sell an August feeder cattle contract. The data is from the CME Group and was published on TradingView.com, Aug. 11, 2017.

How to read the feeder cattle futures chart:

DAILY HIGH █ Closes above opening price
DAILY LOW █ Closes below opening price
OPEN PRICE | **CLOSE PRICE**



Source: CME Group Inc.

sumers buying your product. Retail markets are price setters in that the consumers buying their goods pay the price set by the retailers. A cow-calf producer's consumer is usually a stocker producer or feedyard operation. So, how do these buyers determine the price they are willing to pay for your cattle? They've done the math and figured out their breakeven. This breakeven is the maximum price they are willing to pay based on what they are expecting to receive for the cattle, less the costs expected to incur during their production phase. What does this mean for you as a producer? You also need to know your breakeven price, not as a maximum price you're willing to pay but as the minimum price you can receive without taking a loss. This is where having a history of income and expense statements comes in handy. By looking back at your statement history, you can determine your production cost and the minimum amount you can receive for your calves.

WHAT'S YOUR WILLINGNESS TO ACCEPT RISK?

Everyone has a different level of risk that they are willing to accept. We're going to talk about three levels of risk: high, medium and low.

HIGH RISK: CASH MARKET

The method with the highest market risk level is strictly using the cash market. With all the discussion about the volatility of today's cattle markets, someone who is willing to take their chances and sell cattle on the cash market without any risk management plan in place would be considered a risk-seeker or risk-taker. If this is you, it is

perfectly fine.

The reason this is considered the most risky method is that you are at the mercy of the market. If the market goes up, you picked the best method. You didn't have any extra costs from broker fees or margin calls. On the flip side, if the markets go down, you stand to take the biggest losses, making this the worst method.

LOW RISK: FORWARD CONTRACTING

For those who don't want to leave anything to chance, there's forward contracting. With your breakeven price in mind, you find a buyer who is willing to pay you an agreed price above your breakeven price on a set date that the cattle will be delivered. Just remember, while a handshake is good, it's better to get it in writing. So, how does this

work out? If the market price were to drop after your deal, you've made the best choice. No broker fees and no lost profit. But, if the market price were to go up, you've given up the chance to capture that extra profit. Let's imagine this is your preferred level of risk. You want to lock in a price now, but you don't have a buyer lined up to buy your cattle. This is where we turn to the futures markets.

LOW RISK: FUTURES

The futures markets are just that: market price projections for future dates. People from all over the world gather to buy and sell contracts for different commodities based on these projected prices. Each contract is different depending on the commodity. Since we're talking about cattle, we're going to use the feeder cattle futures. In 1971, the Chicago Mercantile Exchange (now the CME Group) added feeder cattle futures to the list of livestock commodities offered. Based on the peak cash market months, contracts were offered for the months of January, March, April, May, August, September, October and November. Because of the price variation between different sizes of cattle, the quoted prices are for Medium and Large #1, and Medium and Large #1-2 feeder steers weighing 700 to 899 pounds. The total volume for one of these contracts is 50,000 pounds. This means one feeder cattle contract will cover about 62 feeder steers weighing 800 pounds. As the contract date gets closer, the futures price and cash price start to converge. When the contract closes, the difference between those prices is the basis ($\text{Basis} = \text{Cash Value} - \text{Futures Value}$). Basis accounts for the form, location and time aspect of the commodity. The cattle's weight or gender can affect the basis in the way of form, while the distance the sale is happening accounts for the location.

HOW DOES THE FUTURES MARKET WORK?

How do people from all over the world get together and project a price for cattle for a date that falls between the end of the month (or the next month a contract is available, known as the nearby contract) all the way out to almost a full year away? The futures market is a free market working as it should. As information is made publicly available, traders use this information as they see fit to predict where the new price should be. If the information they have indicates the price is going to drop, they will sell a contract to someone who believes the market is going to go up. This is called taking a short position. If the market follows their expectations and goes down, they will offset their position by buying back that contract at a lower price, hence the phrase "buy low, sell high." If the market actually goes up, they will lose money, while the person who took the other position makes money. People who take part in this without producing the commodity or without the intention of buying it are called speculators. For those who are producers or buyers, this practice is called hedging.

When dealing with futures, a margin



TERMS TO KNOW

Seller's Breakeven Price - The minimum price you can receive without taking a loss.

Futures Market - Where contracts for future deliveries on commodities are bought and sold.

Broker Fees - Commissions paid to the broker who acts as the agent when buying or selling futures contracts or options.

Margin Account - An account to hold the funds required to have a position in the futures market.

Margin Calls - Monies that must be sent to the broker firm to maintain a position in the futures market when the market moves against the held position.

Basis - Accounts for the deviation in the form, location and time aspect of the commodity from the contract specifications.

Strike Price - The designated price level at which an option is traded.

account is set up and an initial balance is deposited in that account. You must maintain your margin balance in order to keep your position. These initial margin requirements and maintenance levels can differ by brokers. In the example earlier, a trader speculated the market was going to go down and took a short position. Fortunately, they guessed the market's movement right; as the market falls, they get money deposited into their margin account. However, if they speculated wrong and the mar-

ket went up, for every \$1 per hundredweight the contract goes up, \$500 is taken out of their margin account. At the end of every day, our account is marked to market, meaning the CME will adjust our margin account based on what we made or lost that day. If the balance in that margin account gets too low, a margin call is made telling you a deposit needs to be made. This can become an issue for hedgers if they don't understand what's really happening.

AN EXAMPLE OF A SHORT HEDGE TO MINIMIZE MARKET RISK

Imagine we want to lock in a price like forward contracting would do, but we don't have a buyer. We let the futures market become our buyer. Let's assume the basis is going to stay constant, we don't have brokerage fees, and it is the beginning of May. We plan to sell 62 feeder steers weighing 800 pounds, or one contract worth of feeder cattle. We know we want to sell these steers at the first of August. We've calculated our breakeven to be \$134 per hundredweight. Therefore, we are watching the August feeder contracts go above our breakeven. It just so happens the cash price for an 800-pound steer at our local sale barn on that day is \$145 per hundredweight, but the August futures price is above our breakeven by \$20 per hundredweight, so we decide to hedge and sell one August feeder cattle contract for \$154 per hundredweight. We deposit our initial balance into our account, say it's \$4,000, into our margin account. Our

maintenance margin is \$3,000, so we'll have to keep the balance at that amount or above. Looking at Figure 1, we can see the market moved up to \$160 per hundredweight within a few days of selling that contract.

By the end of the first week, we've already had to pay an extra \$2,000 into our margin account just to keep at the maintenance level. This may feel like a bad decision, but when we look at what's happened on the cash market, the price of our cattle has gone up as well. So that \$2,000 we paid into the margin account is going to come back to us when we sell the steers on the cash market. As time moved forward, we can see from the figure that the market fell to \$150 per hundredweight shortly after. As the market moved down, our margin account was credited the \$3,000 we lost in the first run up, as well as an additional \$2,000 as the market dropped below the price at which we sold. That's more like what we're wanting, right? Not really. On the cash market, the value of our cattle has dropped as well.

As we fast forward to the beginning of August, the market moved back up then down again, finally settling around \$148 per hundredweight. No extra margin calls were needed, and we sell the steers for \$139 per hundredweight (\$148 per hundredweight from the futures - \$9 per hundredweight from the basis = \$139 per hundredweight on the cash market).

As soon as we sell the cattle, we need to offset our hedging position. If we hold onto the position longer than we have the cattle, we become speculators. We get back the losses we took in the cash market from the gains we made in the futures market, but we also get back the balance in our margin account. Reviewing what we have done, our initial cash market value was \$145 per hundredweight. On May 1, we sold an August feeder cattle contract for \$154 per hundredweight. On Aug. 1, we sold the cattle on the cash market for \$139 per hundredweight. Last, we offset our futures position by buying back an August feeder contract for \$148 per hundredweight. The total value we get back is \$145 per hundredweight (\$154 + \$139 - \$148 = \$145).

One thing that makes hedging a challenge is when you have to make multiple margin calls. This cuts into your available capital. Make sure you understand you will get the capital back in the end through the cash market price.

Brokerage fees are a cost we did not include in this example. These fees end up adding a cost of 10 to 20 cents per hundredweight to a feeder contract. We also assumed a constant basis. While this would be nice, the final basis is an uncertainty but not as volatile as the cash market. Therefore, while we limited ourselves to any potential losses in a down market by hedging, we also limited ourselves to any potential gains in an up market. Is there an option that gives us the opportunity to prevent any losses but not prevent any extra gains? Yes, it's called just that: an option.

MEDIUM RISK: PUT OPTION

Options give you the choice but not the obligation of buying or selling the underlying contract. A "put" gives you the option to sell a contract. A "call" gives you the option to buy a contract. You can also buy or sell a put, and buy or sell a call. Each of these has a purpose, but for now we will focus strictly on buying a put option for feeder

cattle. A put is the best way to set a minimum expected price without limiting the potential income from the market going up.

When we buy a put, we pay a premium for a desired strike price. The strike price is the value at which we could be selling a contract should we exercise the option. To calculate the minimum expected price, you take the strike price less the basis and the price paid for the premium per hundredweight. In our hedge example, we had a breakeven price of \$134 per hundredweight. At the beginning of May, the futures market was at \$154 per hundredweight. At this price, the premium for a \$134 per hundredweight option was very low, due in part to the market being on the rise. For a put, as the market rises, its value will move closer to \$0. Since we only wanted to protect our breakeven, and maybe a little profit since the market is moving up, we are going to buy an August feeder cattle put option

Before you call up a commodities broker and dive into the futures markets sharpen your pencil or open a spreadsheet, and speak with everyone involved.

at a strike price of \$150 per hundredweight. The higher the strike price goes, the more expensive it will become. However, because our breakeven is \$20 per hundredweight lower than where the underlying futures contract is, or at the money, we can buy a put that's a little above our breakeven. At this strike price, our premium is about \$600, or \$1.20 per hundredweight ($\$600 \div 500 \text{ hundredweights} = \$1.20 \text{ per hundredweight}$). If it were at the money strike price, the premium would be closer to \$1,500. The minimum expected value we should receive in this example is \$139.80 per hundredweight ($\$150 - \$1.20 - \$9 = \139.80).

Within that first week of owning our option, the markets continued to climb. This led to our option losing value, but we haven't had to make any margin calls because we haven't taken a position in the market. As time moved on, the market went up as high as \$161 per hundredweight, down to as low as \$141 per hundredweight and everywhere in between. When Aug. 1 finally comes, the futures market is at \$148 per hundredweight. We sell the steers on the cash market for \$139 per hundredweight (remember our -\$9 per hundredweight basis).

Now, we have a couple of choices. Our put option has a value of almost \$1,650. We could sell it back for that value and recover our \$600 premium cost plus \$1,050 extra. This adds a value of about \$2 per hundredweight to our cattle ($\$1,050 / 500 \text{ hundredweights} = \$2.10 \text{ per hundredweight}$). This works out because

we sold the cattle on the cash market for \$139 per hundredweight. We paid \$1.20 per hundredweight for the premium on our put but were able to sell it back for \$2.10 per hundredweight giving us a total value for this strategy of \$139.90 per hundredweight ($\$139 - \$1.20 + \$2.10 = \139.90). The other choice is to exercise the option and sell a futures contract at \$150 per hundredweight. If we do this, we would immediately buy the contract back at the current price of \$148 per hundredweight. This \$2 per hundredweight change allows us to make an additional \$1,000. The \$2 per hundredweight loss we took on the cash market was made back through exercising our put option. The total value for this strategy would end up being \$139.80 per hundredweight. This is because we sold the cattle for \$139 per hundredweight, paid a premium of \$1.20 per hundredweight and made \$2 per hundredweight from exercising our option ($\$139 - \$1.20 + \$2 = \139.80). If the futures price on Aug. 1 had been \$5 per hundredweight higher than our strike price (\$155 per hundredweight), the value of our put option would have been around \$200. Because we're closer to the end of the contract, there is less risk that it will move below our strike price. We have a couple choices in this scenario. We can sell the put option back and recover some of our costs, about 40 cents per hundredweight. We could sell the cattle at \$146 per hundredweight (\$155 futures - \$9 basis = \$146 cash), less the premium of \$1.20 per hundredweight plus the 40 cents per hundredweight for selling the option back, giving us a total value of \$145.20 per hundredweight. Our other choice is to simply not use the option and let it expire. This would return us a value of \$144.80 per hundredweight ($\$146 - \$1.20 = \$144.80$). If the futures price was even higher, the option would have been worth even less but our cattle would be worth that much more, which would have allowed us to capitalize on a higher market price without chancing a loss.

CONSIDER THE TRADEOFFS

While the option may sound like the best choice, each choice has a tradeoff compared to another. A hedge is the best choice if the market goes down but the worst choice if the market goes up. The cash market is the best choice if the market goes up but the worst if the market goes down. A put option is second best if the market goes down because of the premium cost but also the second best if the market goes up, again because of the premium cost.

Depending on your level of willingness to accept risk, one of these risk management tools could be useful to you. While these examples provide the general concepts of how they work, the way each affects your bottom line could be different depending on your situation. So, before you call up a commodities broker and dive into the futures markets, sharpen your pencil or open a spreadsheet, and speak with everyone involved, the owner, the manager, your spouse and your banker, to make sure everyone understands the plan and how it moves.

If you'd like to learn more about using market risk management tools in your operation, contact one of the agricultural economists at the Noble Research Institute. We'd be happy to sit down with you and discuss them. 🐮



RANGE

Livestock are Part of the Biodiversity Discussion

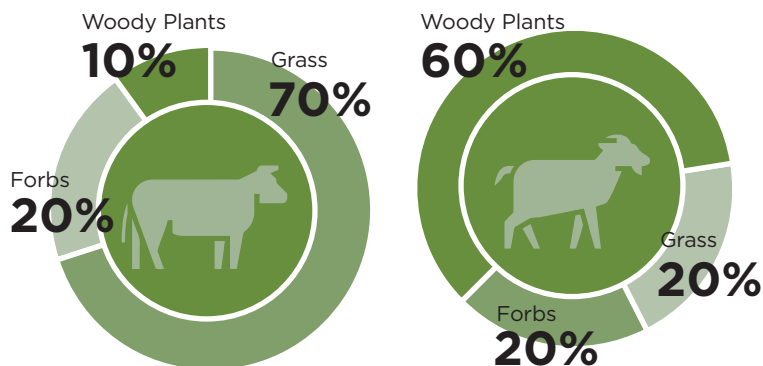
by Rob Cook, pasture and range consultant | rwcook@noble.org



Recently, much has been said of the importance of biodiversity on our grazing lands and crop fields. Biodiversity allows for healthy soils and plants because the cycles that drive a healthy ecosystem, such as the nutrient and energy cycle, do not function properly without a diversity of plants and organisms. Much of the organism diversity we read or hear about today deals with microorganisms that we find in healthy soils or in the wrong proportions in unhealthy soils. Livestock are often overlooked when it comes to the biodiversity discussion, but that doesn't come as much of a surprise to most. Livestock operations strive to produce as uniform of a product as possible. Many times that is even narrowed to a single breed or type of cow. Some regions across the U.S. are known as "cow country" and other types of livestock are negatively perceived. Some regions are thought of as cow-only areas because it is perceived that other types of livestock cannot be managed successfully in that area for various reasons. However, in other regions, such as central Texas, grazing sheep, goats and cattle on the same acreage is considered a normal practice. Grazing managers in other regions have started to incorporate multispecies grazing in their management plans. Incorporating multispecies grazing into a management plan can help improve the ecological sustainability of grazing lands, aid in managing animal health and help increase economic sustainability.

Diets compared in cattle and goats

Cattle heavily consume grasses with less than half their diet being forbs and woody plants. Goats however eat woody plants for a majority of their diet. Grazing the two together may benefit pasture land.



CONSIDER LIVESTOCK DIETS

The diet of cattle, sheep and goats vary compared to one another, although there can be some overlap. Cattle consume grasses at a rate of about 70 percent of their diet, followed by forbs (broadleaf weeds) at 20 percent and certain woody plants at about 10 percent. Sheep consume grasses at about 60 percent of their diet, forbs at 30 percent and woody plants at about 10 percent as well. Goats consume grasses at about 20 percent of their diet, forbs at 20 percent

and browse on woody plants make up the remaining 60 percent of their diet. When the stocking rate of all three is set to match the carry capacity of a pasture, they can be grazed together or in sequence following one another, depending on the management goal.

WHY USE MULTISPECIES GRAZING?

Some grazing managers use multispecies grazing because they feel it is a more efficient way to utilize all of the production on their pastures and keep the densities of different plant types in the proper ratio to match the goals of their operation. This can be especially true when pastures have high densities of brush species that goats will consume along with grasses that cattle prefer over the browse. Managers with these types of pastures feel they can actually increase the stocking rate in the pasture because the goats are more efficiently using the browse than cattle can alone. In fact, operations have been able to graze anywhere from one to 12 goats per cow without reducing the cattle stocking rate in certain situations. This can only be done when the grazing manager has done a proper job of matching the forage demand of the cattle with the available forage and the browse demand of the goats with the available browse.

GRAZING GOATS WITH CATTLE

Goats have a reputation of being “pasture wreckers” in many areas. This reputation is not totally unfounded, but it is not the fault of the goat. Goats are very opportunistic grazers and will shift from browsing woody plants to grazing grasses if they need to. Oftentimes, grazing managers use goats and cattle together in situations that will not support both without a reduction in cattle numbers. Goats placed on a pasture with a few forbs and very little brush will begin to graze more grass than what is considered normal and start to compete with the cattle. Goats have the ability to graze closer to the ground than cattle because of their mouth and lip structure. The goats grazing grasses closer to the ground combined with the grazing pressure from the cattle results in overgrazing that can be more dramatic and impressionable than overgrazing from cattle alone. Pastures composed of only grasses, such as a bermudagrass field, will probably be best managed with grazing only cattle until weed pressure becomes high enough to use another species as a tool to decrease the weed densities. Also, not all browse species are created equal to goats. It is not uncommon to find a dense stand of mesquite with only Texas wintergrass growing underneath in the Southern Great Plains. Grazing managers have been known to attempt to use goats to suppress the mesquite canopy and allow sunlight into the understory in an effort to encourage warm-season grasses to compete with the wintergrass. Goats will rarely consume the foliage or shoots of mesquite trees. If this is not taken into account when developing stocking rates, the pasture will become overgrazed. This is a simple case of trying to use goats as a tool in the wrong situation.

USING GOATS TO MANAGE BRUSH

Grazing or browsing each species can be used as a tool to manage an ecological concern if it is implemented in the correct situation. Goats can be used successfully to suppress the densities of several brush species including cedar. This process is not as immediate as using herbicides or mechanical treatments, so do not expect to meet your goal in one season of using goats to target brush. This management tool, like most others, is not a one-time application. Once brush suppression has been achieved, continued pressure is needed to keep the plants in check. Keep in mind that a lighter stocking rate of goats will need to be used to avoid competition with cattle. While mesquite is not readily consumed by goats, they can help slow its invasion. Mesquite pods are eaten by most classes of wildlife and livestock. In fact, many animals act as vectors for the spread of mesquite seeds across the landscape. Goats can be used as predators of

Goats can be used successfully to suppress the densities of several brush species.

mesquite seeds. Studies have shown that goats will eat more seeds than other livestock species, and substantially fewer of the seeds will survive digestion. Of the seeds that do survive digestion, even fewer will germinate compared to seeds passed through other livestock species. This allows a producer to concentrate goats in areas during the time of mesquite pod availability to eventually reduce mesquite seedling recruitment in those areas. Sheep and goats have been successfully used as a tool to suppress weed growth in pastures. Land managers will concentrate sheep and/or goats in areas with high densities of weeds as a management practice for weed control.

Remember that when using grazing or browsing animals as a tool to manage specific plants or grazing multiple species of livestock together to improve the harvest efficiency of the plants within pastures, it becomes even more important to match the forage/browse demand that each animal will have with the production in the pasture. Monitoring the use of grasses, forbs and woodies is vital to ensure there will be no more competition between livestock species than planned.

REDUCE PARASITE PROBLEMS

Multispecies grazing can also aid in animal health management. Parasites are a problem that grazing managers battle in most livestock across the nation. Most parasites are species-specific. When a cow ingests a parasite

that is specific to goats, the parasite will not be able to complete its life cycle. This results in a decrease in parasite loads in pastures grazed by multiple livestock species. Proper rotations and forage utilization will also help reduce parasite problems. Reduced problems will lead to fewer treatments. Not only will livestock be potentially healthier from a reduced parasite load, but fewer treatments will reduce the chances of developing treatment-resistant parasites.

Multispecies grazing allows a flock of sheep and/or goats to bond with a cattle herd. This bond will help keep goats inside the pasture intended for them to browse, although it will not completely do away with the need to upgrade fences for goat management. Keeping the goats and sheep with cattle is thought to help reduce predation problems. When the animals act as one large herd or flock, the smaller animals get some level of protection from the larger ones, such as mature cows.

CONSIDER THE ECONOMICS

For a management decision to be successful, it must at least maintain the economic sustainability of the operation. Multispecies grazing has the potential to increase the sustainability of many operations in certain situations. Producing different types of products can aid in risk management because diversification will keep you from having all your eggs in one basket. In some cases, grazing managers can increase the amount of meat produced and sold from each acre by more effectively utilizing the different types of plants in their pastures. This could lead to a revenue increase. Expenses could be reduced by using multispecies grazing to replace or augment traditional practices for brush and weed management that often carry a lofty price tag. A reduction in parasite treatments could also lead to a decrease in expenses. Using goats as a brush or weed management tool might not justify having a breeding operation. Buying young animals, using them as a tool, then selling them after they have reached a certain weight could be the best option financially. This approach would also allow flexibility to ensure a grazing management plan can be properly implemented in less-than-ideal conditions. Any wildlife goals would need to be heavily considered when selecting species to use and setting stocking rates. An analysis of each enterprise, in addition to a whole operation analysis, would need to be done to make sure that it is implemented in the correct way and to ensure it would at least maintain the economic sustainability of the operation.

Multispecies grazing is not a new idea. In fact, it was once more popular than it is now. Farmsteads relied on using a combination of cattle, sheep, goats, poultry and swine to meet the needs of their family and land. Today, the practice of grazing multiple livestock species is becoming popular in some circles. While cattle, sheep and goats grazing on the same property is not an uncommon sight in many areas, more recently managers have begun to incorporate poultry into their management in what appears to be higher numbers. Many people across the nation have realized the benefits of biodiversity in their plants and soils. Biodiversity in grazing animals can be just as vital. 🐮



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UPCOMING EVENTS

For more information or to register, please visit www.noble.org/events or call Danielle Pacifico at 580-224-6376. Preregistration is requested.



SEPTEMBER | **7**

Pecan 201 Workshop

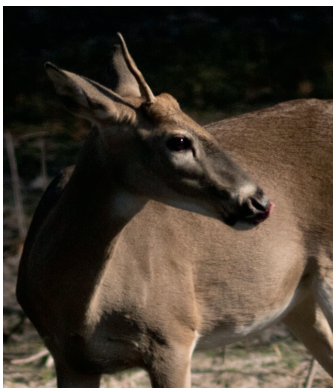
9 a.m. - 4 p.m.
Noble Research Institute
Kruse Auditorium
Registration fee: \$20,
includes lunch



SEPTEMBER | **21**

Backyard Farming: Intensive Small Space Food Systems

6-8 p.m.
Noble Research Institute
Kruse Auditorium
No registration fee



OCTOBER | **3**

Deer Management Field Day

2-6 p.m.
Noble Research Institute
Oswalt Road Ranch
No registration fee



OCTOBER | **17-18**

Protected Agriculture Conference

Hilton Garden Inn and
Noble Learning Center
Registration fee: \$25,
\$40 for couples

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